What is claimed is:

1. A method for detecting an analyte, comprising:

immobilizing a probe on a surface in a channel, wherein the channel comprises an analyte solution or suspension;

applying force to the analyte to move the analyte toward the probe, thereby allowing the analyte to bind the probe;

reversing the force or applying another force, to remove unbound or weakly bound analyte from the surface; and

detecting the analyte bound to the probe.

2. The method of claim 1, wherein the surface is an activated surface and the method further comprises adsorbing or covalently binding the probe molecule to the surface.

3. The method of claim 2, wherein the surface is a surface of a semi-permeable membrane, penetrable for salt and buffer ions, but not for analytes.

4. The method of claim 3, wherein the analyte is moved to and from the membrane electrophoretically.

5. The method of claim 4, further comprising forming a self-forming density gradient in the channel, thereby suppressing convection in the channel.

6. The method of claim 1, wherein the analyte is bound to a particle or forms a portion of a natural complex.

7. The method of claim 6, wherein the density of the particle exceeds the density of a solution and centrifugal forces are used to move the particle to and from the membrane.

8. The method of claim 6, wherein the particle is magnetic and is moved to and from the surface in an uneven magnetic field.

9. The method of claim 6, wherein the particle is charged and is moved to and from the surface by an electric field.

10. The method of claim 1, wherein the probe is one of a population of probe molecules deposited on the surface as a microarray.

11. The method of claim 10, wherein the population of probe molecules is deposited as a bar code or as spot having a specific form to be visually recognizable.

12. The method of claim 6, wherein the particle is subjected to combined action of two forces making it roll or slide over the surface.

13. The method of claim 12, further comprising recognizing and sorting a bead having the analyte captured on its surface, by tethering the bead onto the array of probes.

14. An assembly for performing an electrophoretically-assisted assay, comprising:
an upper and a lower electrode chamber;
an electrode system disposed in the upper and lower electrode chamber,
a plurality of channels through which an electrical current passes; and
a plurality of semi-permeable membranes each having an activated surface, wherein the semi-permeable membranes are positioned across the channels such that current passing through the plurality of channels, passes through the plurality of semi-permeable membranes, and wherein the semi-permeable membranes are penetrable for salt and buffer ions, but not for protein or polynucleotide analytes.

15. The assembly of claim 14, further comprising a deflector disposed in the lower electrode chamber, wherein the deflector is effective for deflecting away from the bottom of the channels, gaseous electrochemical products that form in the lower electrode chamber.

16. The assembly of claim 14, wherein an array of probe molecules is bound to each semi-permeable surface.

17. A plate for an active assay, comprising a plurality of channels and a plurality of semi-permeable membranes having an activated surface with probes bound thereto, wherein each membrane of the plurality of semi-permeable membranes is positioned across a channel of the plurality of channels.

18. The plate of claim 17, wherein a protein or polynucleotide probe is bound to the activated surfaces.

19. The plate of claim 17, wherein an array of probes are bound to each activated surface of the plurality of semi-permeable membranes.

20. The plate of claim 17, wherein the semi-permeable membrane is an activated cellulose membrane.